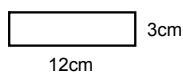


## Ch 11 Measuring Length and Area

11.1 Area of Triangles and  
Parallelograms11.2 Area of Trapezoids, Rhombi  
and KitesArea of a rectangle =  $bh$ Area of a square =  $s^2$ Area of a parallelogram =  $bh$ 

Base and height are perpendicular

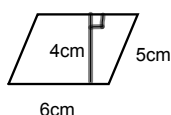
Example 1



$$A = 36 \text{ cm}^2$$

$$P = 30 \text{ cm}$$

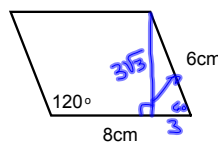
Example 2



$$A = 24 \text{ cm}^2$$

$$P = 22 \text{ cm}$$

Example 3



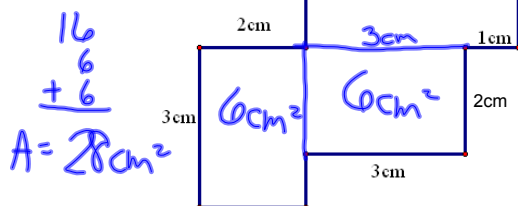
$$A = 24\sqrt{3} \text{ cm}^2$$

$$P = 28 \text{ cm}$$

30	60	90
x	$x\sqrt{3}$	2x
3	$3\sqrt{3}$	6

45	45	90
x	x	$x\sqrt{2}$

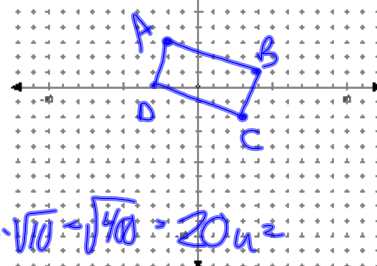
Example 4

Assume all  
segments that  
appear  
perpendicular are.

Example 5

A (-2, 3)  
B (4, 1)  
C (3, -2)  
D (-3, 0)

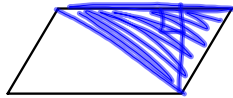
What shape is it?  
Find the area.



$$AB = \sqrt{40}$$

$$BC = \sqrt{10}$$

$$A_{\text{area}} = \sqrt{40} \cdot \sqrt{10} = \sqrt{400} = 20 \text{ cm}^2$$



What is the area of this shape?  
Cut it in half.

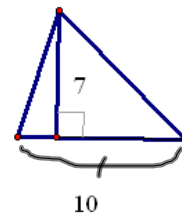
$$A = \frac{1}{2}bh$$

Area of a Triangle =  $\frac{1}{2}bh$

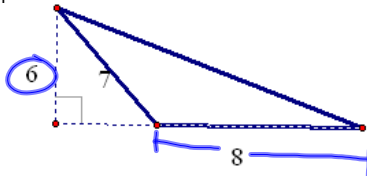
Example 1

$$A = \frac{1}{2} 7 \cdot 10$$

$$= 35 \text{ u}^2$$



Exam



$$A = \frac{1}{2} 6 \cdot 8$$

$$A = 24 \text{ u}^2$$

Example 3

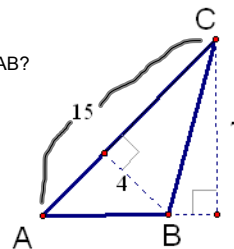
What is the length of AB?

$$A = \frac{1}{2} 15 \cdot 4$$

$$A = 30 \text{ u}^2$$

$$30 = \frac{1}{2} AB \cdot 7$$

$$8.6 = AB$$



Example 4

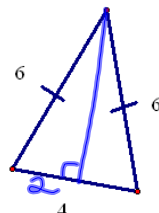
$$36 = h^2 + 4$$

$$32 = h^2$$

$$4\sqrt{2} = h$$

$$A = \frac{1}{2} 4 \cdot 4\sqrt{2}$$

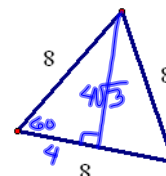
$$A = 8\sqrt{2} \text{ u}^2$$



Example 5

$$A = \frac{1}{2} 8 \cdot 4\sqrt{3}$$

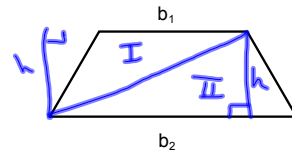
$$A = 16\sqrt{3} \text{ u}^2$$



$$\text{Area of an Equilateral Triangle} = \frac{s^2 \sqrt{3}}{4}$$

$$A = \frac{8^2 \sqrt{3}}{4}$$

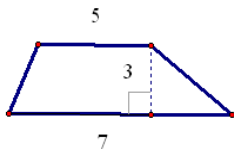
$$A = 16\sqrt{3} \text{ u}^2$$



$$A_I + A_{II}$$

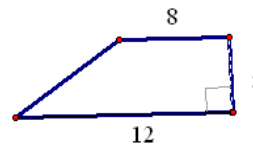
$$A = \frac{1}{2} b_1 h + \frac{1}{2} b_2 h$$

$$A = \frac{1}{2} h (b_1 + b_2)$$



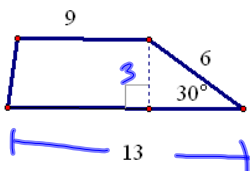
$$A = \frac{1}{2} 3 \cdot (5+7)$$

$$A = 18 \text{ u}^2$$



$$A = \frac{1}{2} 5 (8+12)$$

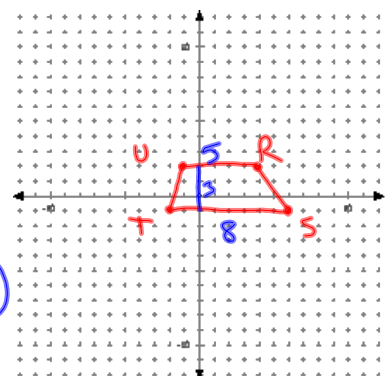
$$= 50 \text{ u}^2$$



$$A = \frac{1}{2} 3 (9+13)$$

$$A = 33 \text{ u}^2$$

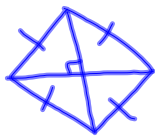
R(4, 2)  
S(6, -1)  
T(-2, -1)  
U(-1, 2)



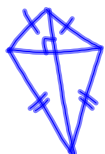
$$A = \frac{1}{2} 3 (5+8)$$

$$= 19.5 \text{ u}^2$$

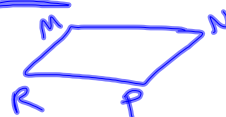
Area of a Rhombus =  $\frac{1}{2} d_1 \cdot d_2$



Area of a Kite =  $\frac{1}{2} d_1 d_2$



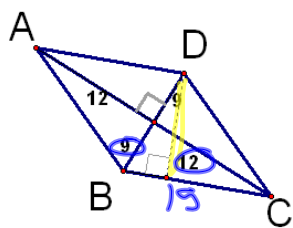
M(0, 1) MNPR is a rhombus  
N(4, 2)  
P(3, -2)  
R(-1, -3)



$$MP = \sqrt{3^2 + (-3)^2} = \sqrt{18} = 3\sqrt{2}$$

$$NR = \sqrt{5^2 + 5^2} = \sqrt{50} = 5\sqrt{2}$$

$$A = \frac{1}{2} 3\sqrt{2} \cdot 5\sqrt{2} = 15u^2$$



What is the area of the rhombus?

$$\frac{1}{2} 24 \cdot 18 = 216u^2$$

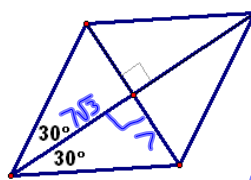
What is the height of the rhombus?

$$A = bh$$

$$216 = 15 \cdot h$$

$$144 = h$$

$$9^2 + 12^2 = 15^2$$



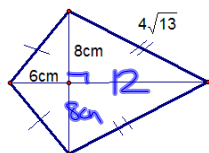
What is the area of the rhombus?

$$d_1 = 14$$

$$d_2 = 14\sqrt{3}$$

$$A = \frac{1}{2} 14 \cdot 14\sqrt{3}$$

$$A = 98\sqrt{3}u^2$$



$$(4\sqrt{13})^2 = 8^2 + x^2$$

$$208$$

$$-64$$

$$= \frac{1}{2} 16 \cdot 18$$

$$A = 144cm^2$$

HW

p723-724

#s 4-8, 12, 16-18, 27, 28

p733-734

#s 4, 5, 8, 9, 17, 19, 24, 28, 29